Stoller
Hanford Office

DOE-EM/GJ1217-2006

299-E28-88 (A6839)
Log Data Report

Borehole Information:

Borehole: 299-E28-88 (A6839)			**Site:** 216-B-62 Crib		
Coordinates (WA St Plane)		**GWL[1] (ft) :** None		**GWL Date:**	12/12/05
North	**East**	**Drill Date**	**Elevation (ft) (TOC)**	**Total Depth (ft)**	**Type**
136823.939	573062.557	06/83	679.5	28	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded steel	2.9	6 1/2	6	1/4	2.9	27.7

Borehole Notes:

Casing diameter and stickup measurements were acquired using a caliper and steel tape. Logging data acquisition is referenced to the top of casing (TOC).

Spectral Gamma Logging System (SGLS) Equipment Information:

Logging System: Gamma 4E		**Type:** SGLS (70%) SN: 34-TP40587A
Effective Calibration Date: 12/21/04	**Calibration Reference:**	DOE/EM-GJ854-2005
	Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	**1**	**2 - Repeat**	**3**	**4**	
Date	12/14/05	12/14/05			
Logging Engineer	McClellan	McClellan			
Start Depth (ft)	27.5	15.0			
Finish Depth (ft)	3.5	10.0			
Count Time (sec)	100	100			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	1.0			
ft/min	N/A[2]	N/A			
Pre-Verification	DE121CAB	DE131CAB			
Start File	DE131000	DE131025			
Finish File	DE131024	DE131030			
Post-Verification	DE131CAA	DE131CAA			
Depth Return Error (in.)	0.0	0.0			
Comments	No fine-gain adjustment	No fine-gain adjustment. Repeat section.			

Logging Operation Notes:

Logging was conducted with a centralizer on the sonde. A repeat section was collected to evaluate the logging system's performance.

Analysis Notes:

Analyst:	Pope	**Date:**	06/05/06	**Reference:**	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging system were performed before and after data acquisition. Acceptance criteria were above the upper control limits for all three energy peaks, the maximum being by 4% for the 1461 keV line. The resolution control limits are occasionally exceeded due to, among other things, differences in local environments in which verification spectra are acquired. Log spectra and the post-survey verification spectrum both exhibit good resolution, and therefore the pre-survey verification spectrum is provisionally accepted. All data from the verification spectra fall well within the HASQARD limits.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated using the EXCEL worksheet template identified as G4EApr05.xls. A casing correction for 0.25-in. thick casing was applied to the SGLS data.

Results and Interpretations:

^{137}Cs was detected from 7.5 to 11.5 ft, and at 5.5 ft in this borehole. The maximum concentration is approximately 0.3 pCi/g at 10.5 ft. The MDL[3] for ^{137}Cs averages approximately 0.15 pCi/g for this log. No other man-made radionuclides were detected in this borehole.

Westinghouse Hanford Company logged this borehole in 1994 with the Radionuclide Logging System (RLS). The ^{137}Cs concentrations determined by the RLS, and decayed to 2005, show good agreement with the current SGLS measurements.

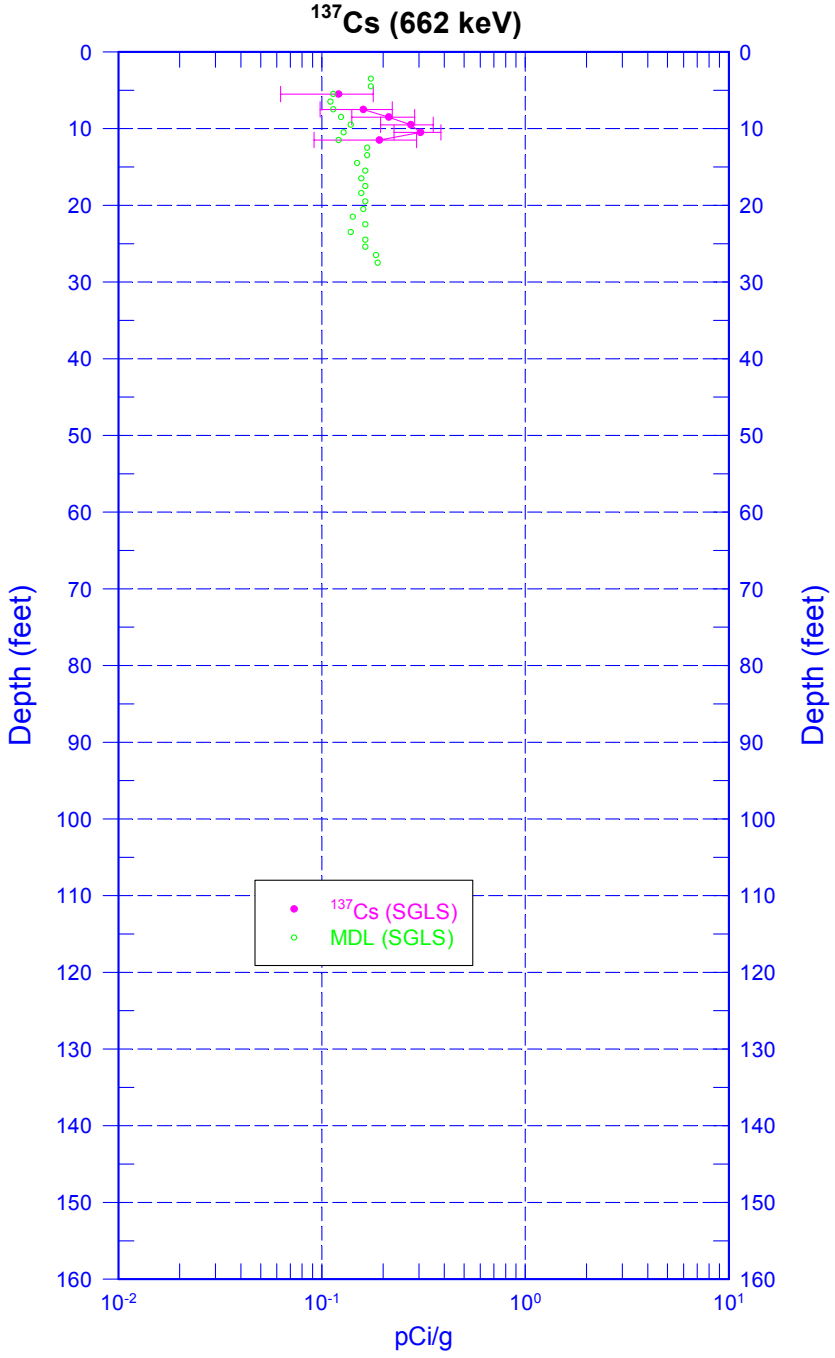
The repeat section for the SGLS was inadvertently run every 1.0 ft from 10.0 to 15.0 ft, instead of from 10.5 to 15.5 ft, and thus the repeatability of the data is less clear for this log. However, through visual inspection of the "Repeat Section of Natural Gamma Logs" plots, there appears to be good agreement between the log and repeat log when the data are interpolated between depths for the naturally occurring radionuclides. Similarly for the "Repeat Section for Man-Made Radionuclides" plot, the interpolated data from the main log are clearly within the ranges of uncertainty of the repeat data.

List of Plots:

Man-Made Radionuclides
Natural Gamma Logs
Combination Plot
Total Gamma and Dead Time
SGLS/RLS Man-made Comparison
Total Gamma Logs
Repeat Section for Man-Made Radionuclides
Repeat Section of Natural Gamma Logs

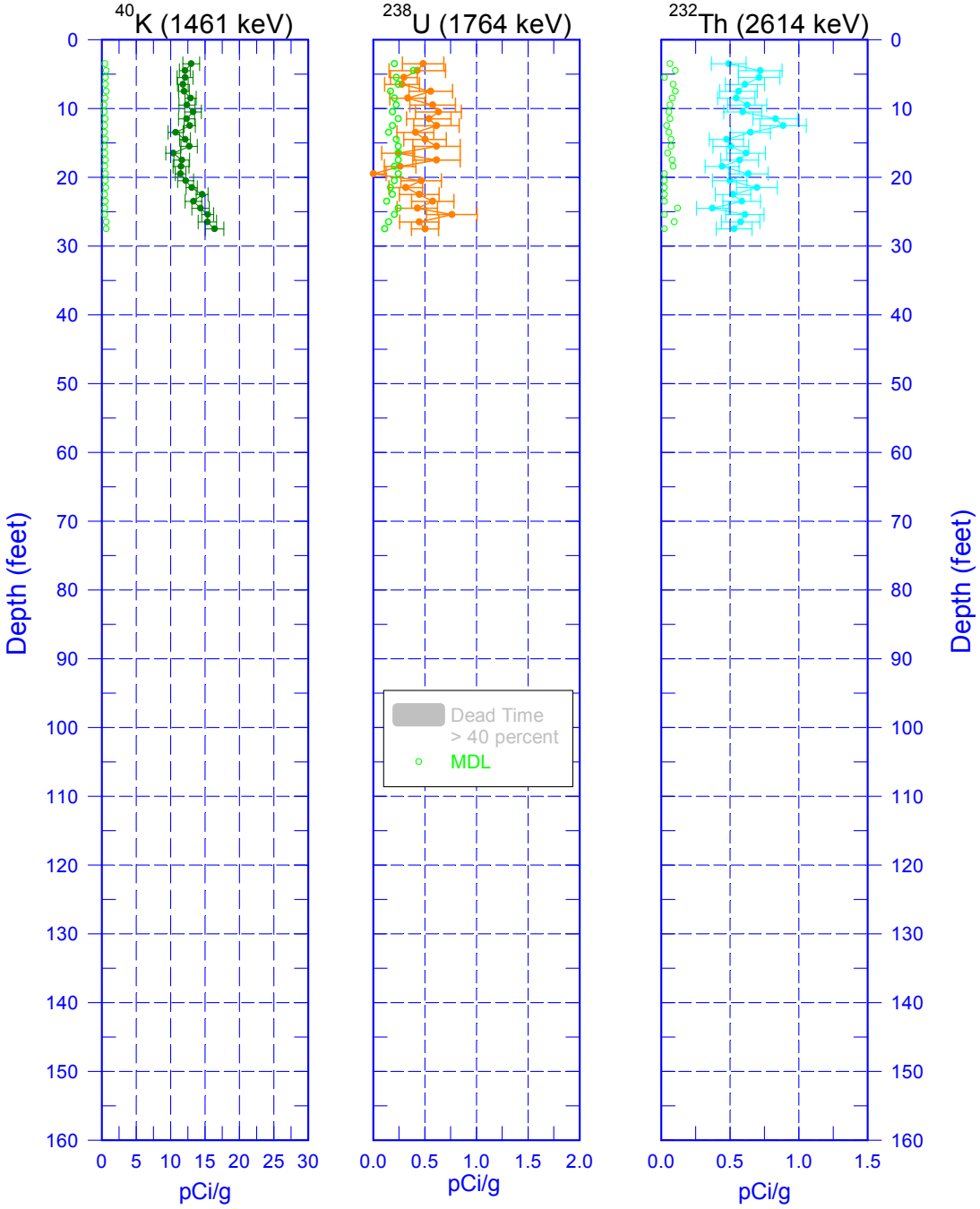
[1] GWL – groundwater level
[2] N/A – not applicable
[3] MDL – minimum detectable level

299-E28-88 (A6839)
Man-Made Radionuclides



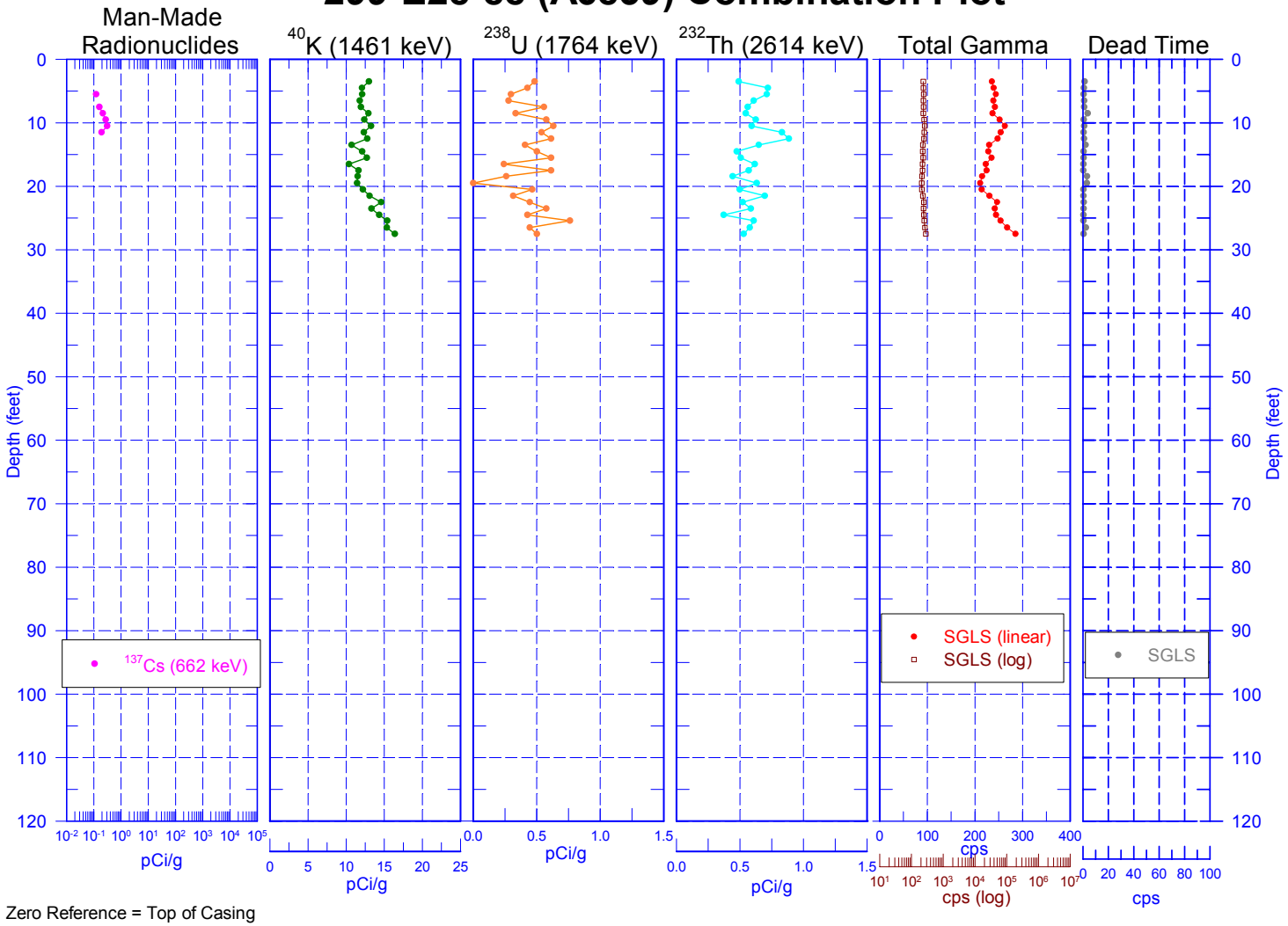
Zero Reference = Top of Casing

299-E28-88 (A6839)
Natural Gamma Logs



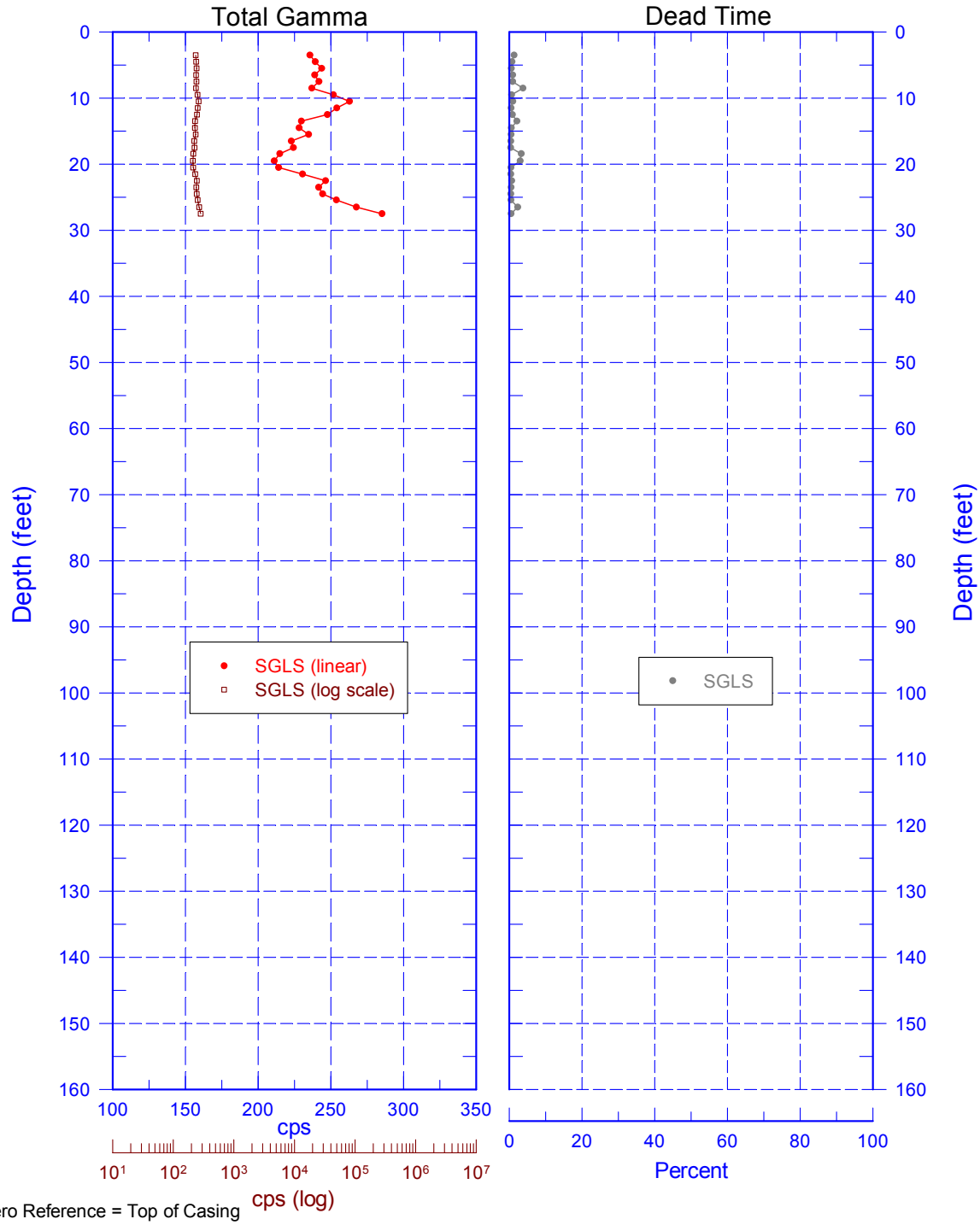
Zero Reference = Top of Casing

299-E28-88 (A6839) Combination Plot



Zero Reference = Top of Casing

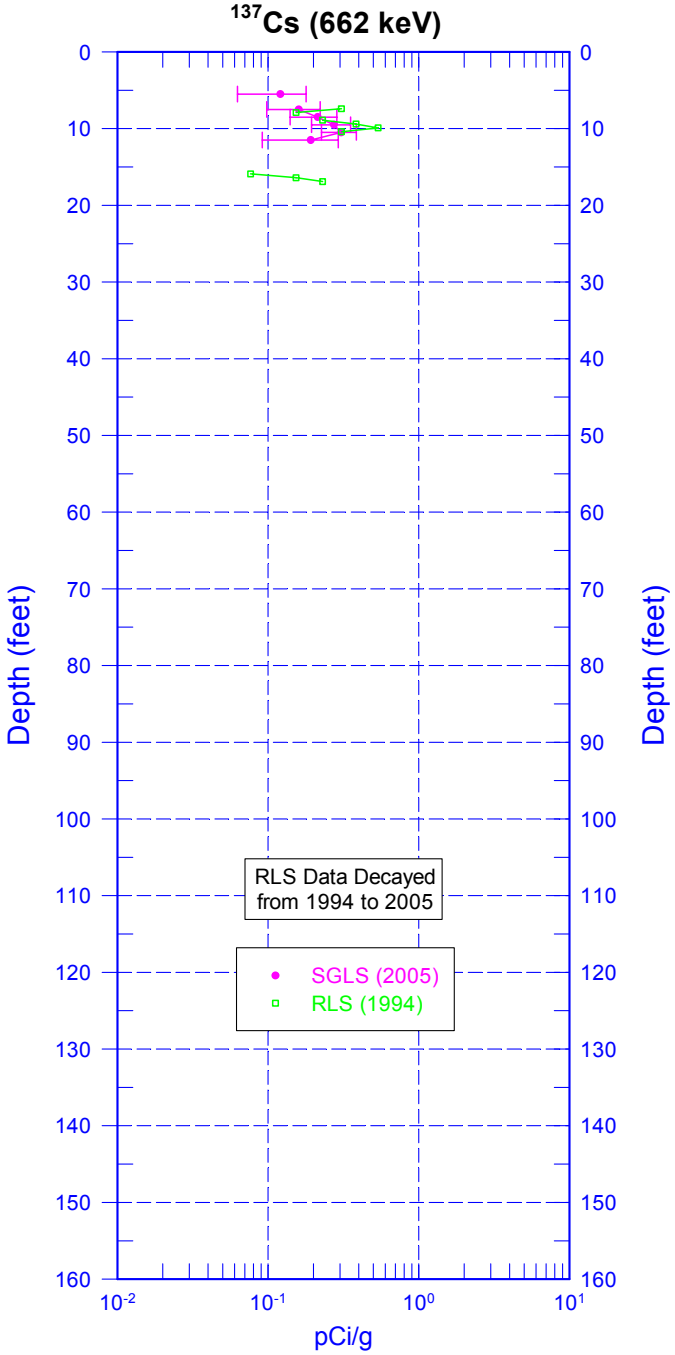
299-E28-88 (A6839)
Total Gamma & Dead Time



Zero Reference = Top of Casing

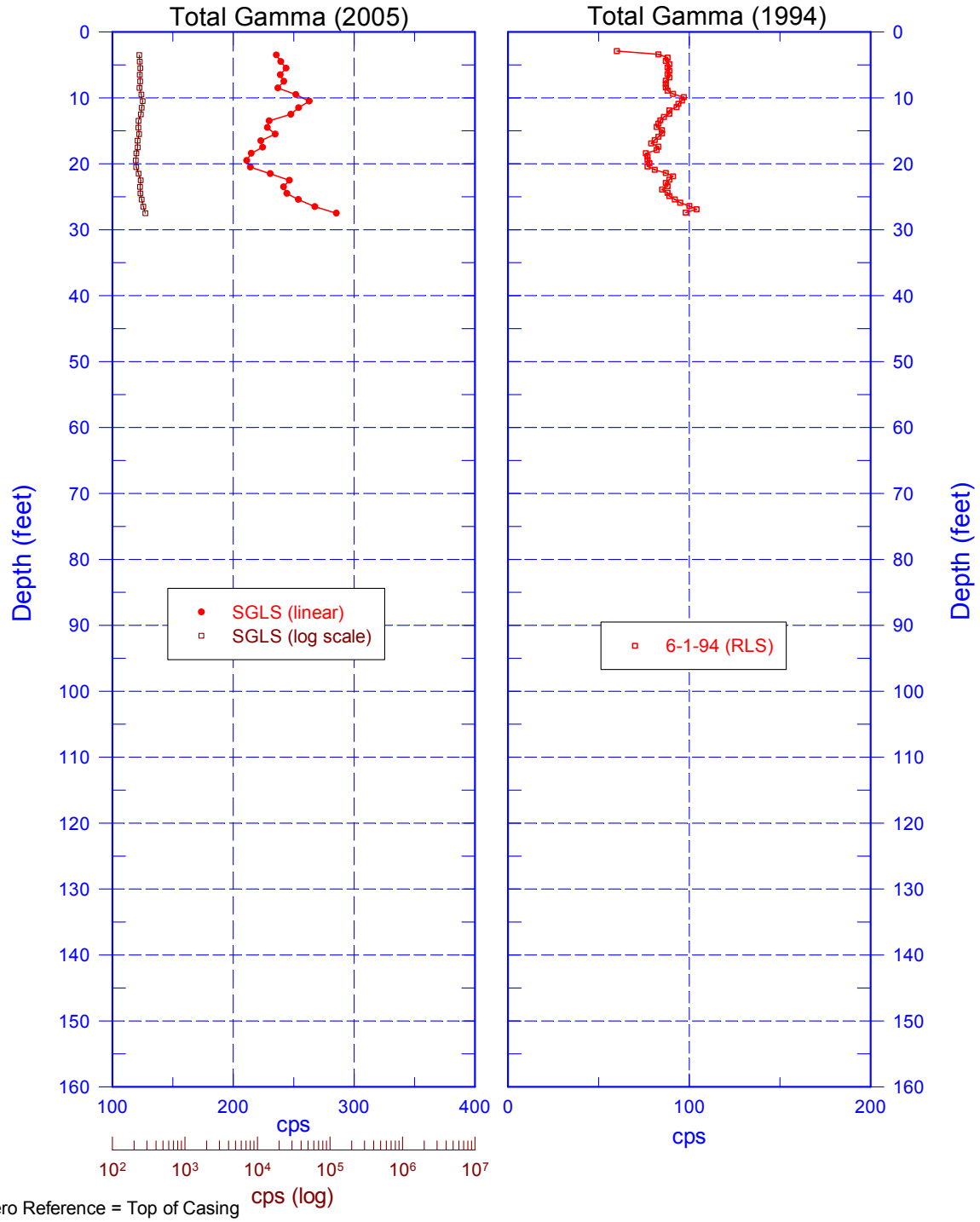
299-E28-88 (A6839)

SGLS & RLS Man-Made Radionuclide Comparison



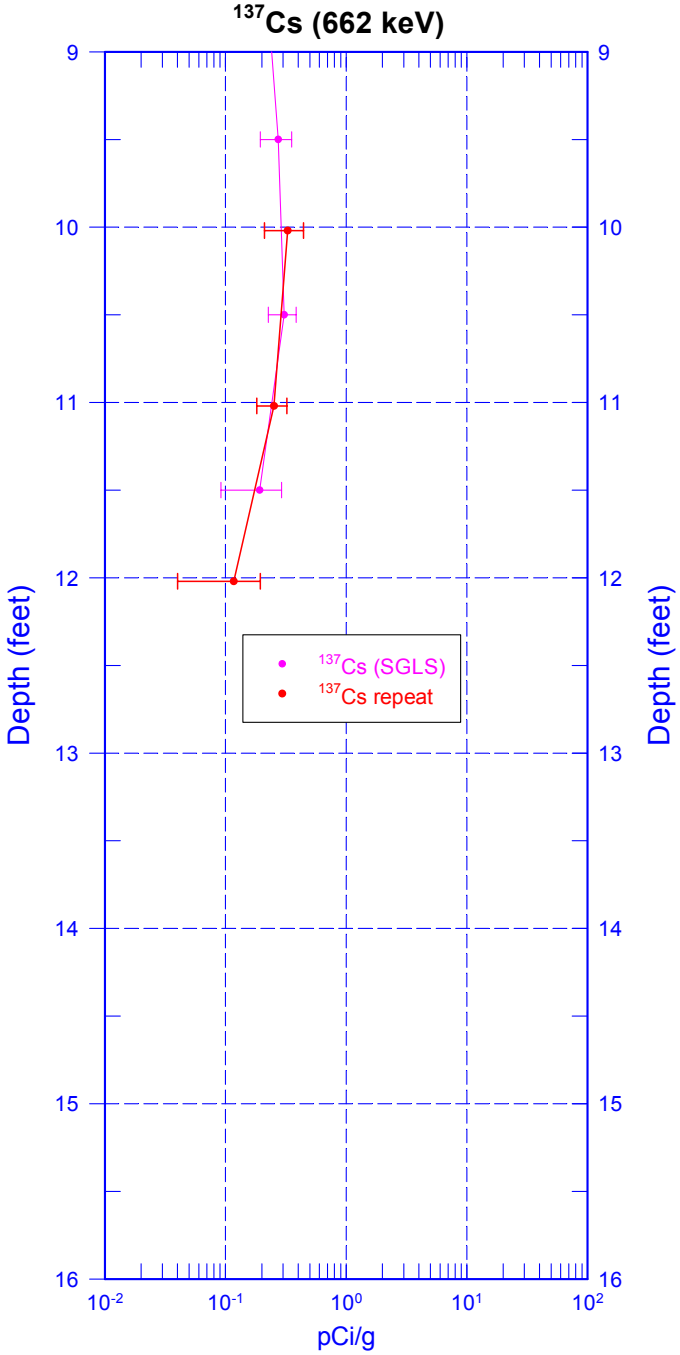
Zero Reference = Top of Casing

299-E28-88 (A6839)
Total Gamma Logs



Zero Reference = Top of Casing

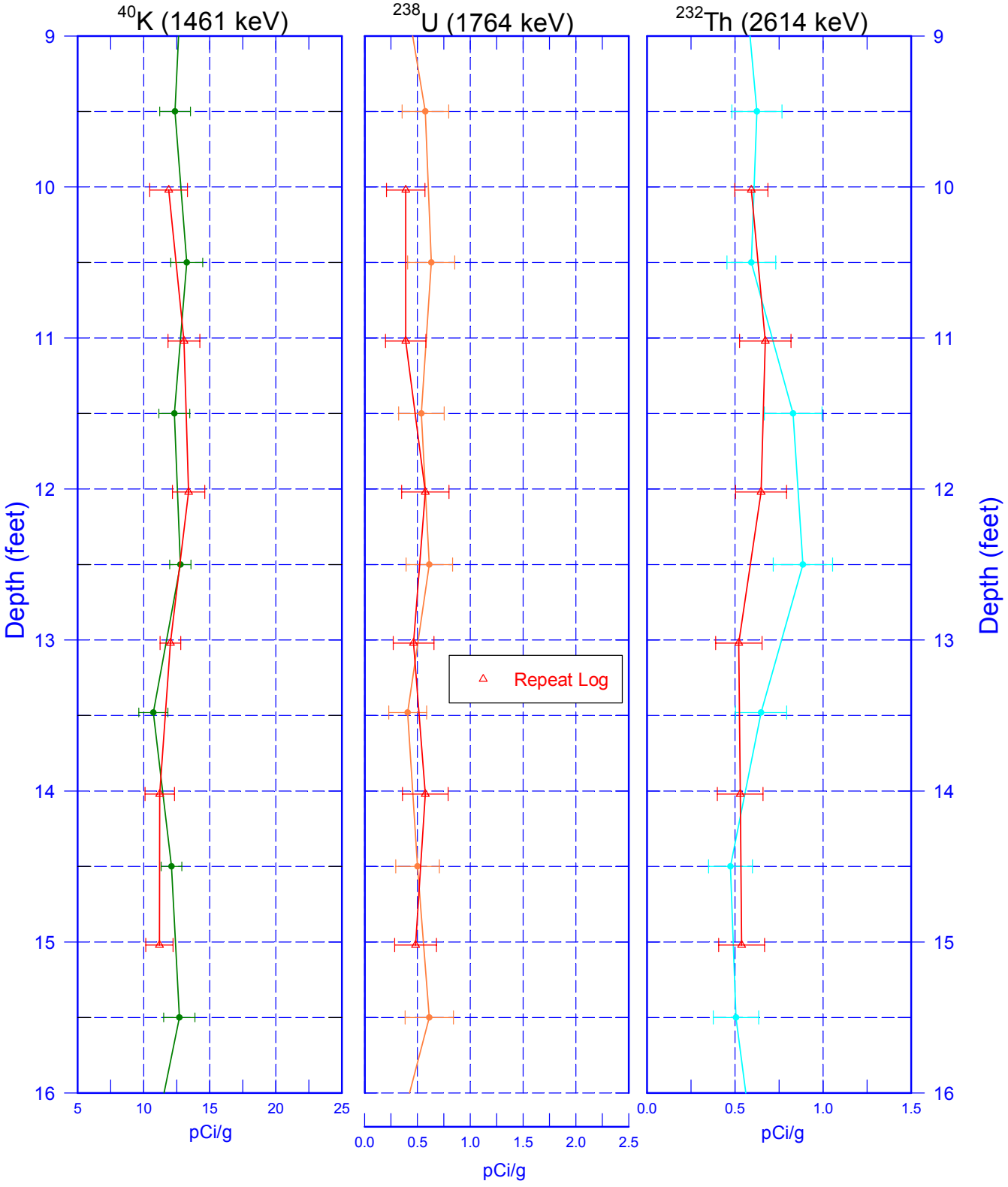
299-E28-88 (A6839)
Repeat Section of Man-Made Radionuclides



Zero Reference = Top of Casing

299-E28-88 (A6839)

Repeat Section of Natural Gamma Logs



Zero Reference = Top of Casing